CLAIM + DETAILED DESCRIPTION

[Claim(s)]
[Claim 1]A feeding member which feeds paper to this manuscript sheaf and is conveyed to separating mechanism when it is provided in a manuscript sheaf characterized by comprising the following laid on a manuscript mounting base up to a manuscript sheaf so that it may be contacted and isolated, and this manuscript sheaf is contacted, An automatic manuscript conveying machine with which a tip part of a manuscript was provided with a regulating member which regulates that a manuscript sheaf moves to the transportation direction lower stream side of a manuscript rather than a prescribed position on a manuscript mounting base in contact with a time of being provided in said manuscript mounting base so that contact and isolation are possible, and contacting a manuscript mounting base.
Establishing one driving means driven so that said feeding member and a regulating member may be moved to contact / isolation position, this driving means is a drive motor.
Member turning which is provided in an outgoing end of each system of a transmission mechanism which divides driving force of this drive motor into two lines, and transmits it, and this transmission mechanism, and moves said feeding member and a regulating member to contact / isolation position according to a drive of each system of this transmission mechanism.

[Claim 2]When said drive motor rotates normally, while driving force of this drive motor is transmitted, [one system of said transmission mechanism] The automatic manuscript conveying machine according to claim 1, wherein a system of another side of said transmission mechanism is constituted so that driving force of this drive motor may be transmitted, when said drive motor is reversed, and it switches contact / isolation position of said feeding member and a regulating member with reciprocal rotation of this drive motor.
[Claim 3]Said transmission mechanism equips a position which branches driving force of said drive motor for each system at least with a gear of a pair which has an one-way clutch, When said drive motor rotates normally, while rotating one side of said gear and transmitting driving force to either one of a feeding member and a regulating member. The automatic manuscript conveying machine according to claim 2 characterized by making it not transmit driving force to any of a feeding member and a regulating member, or another side, without rotating another side of a gear.
[Claim 4]The automatic manuscript conveying machine according to any one of claims 1 to 3, wherein a part of member which constitutes a transmission mechanism of a to [from said drive motor / said feeding member] is provided on a predetermined conveyance member which is allocated near the feeding member and feeds paper to a manuscript, and the same mind.

[Detailed Description of the Invention]

[0001]
[Field of the Invention]This invention about the automatic manuscript conveying machine provided in image forming devices, such as a copying machine, a facsimile machine, and a printer, in detail, It is related with the automatic manuscript conveying machine provided with the regulating member which regulates that the tip part of the feeding member which feeds paper to the manuscript sheaf laid on the manuscript mounting base, and is conveyed to separating mechanism, and the manuscript laid in the manuscript mounting base contacts, and a manuscript sheaf moves to the transportation direction lower stream side of a manuscript rather than the prescribed position on a manuscript mounting base.
[0002]
[Description of the Prior Art]If it is in the automatic manuscript conveying machine (henceforth ADF) which is one of the image forming devices and which is carried in a copying machine recently, When setting the manuscript sheaf which becomes a manuscript tray from two or more manuscripts, in order to make the set location of this manuscript sheaf intelligible, or in order to prevent the set mistake of a manuscript, the stopper claw which tells the set location of a manuscript is formed.
[0003]This stopper claw is formed in a manuscript tray so that contact and isolation are possible, and the tip part of a manuscript regulates that a manuscript sheaf moves to the transportation direction lower stream side of a manuscript rather than the set location on a manuscript tray in contact with the time of contacting a manuscript tray.
It is isolated from a manuscript tray so that it may not become the hindrance of a manuscript paper feeding, when a manuscript sheaf is set and a copy start button is operated, and when all the paper feedings of the manuscript laid in the manuscript tray are completed, a manuscript tray is contacted again.

[0004]On the other hand, when a stopper claw is isolated from a manuscript tray, there is a pickup roller which feeds paper to a manuscript from a manuscript tray in contact with a manuscript, and, [this pickup roller] In ADF of the type which dissociates from the upper part and feeds paper to a manuscript sheaf, it is provided up to a manuscript tray and contact and isolation are attained at the manuscript sheaf. Although there are some which move and contact the pickup roller side which the manuscript tray suspended in this manuscript tray upper part to the pickup roller allocated in such the upper part, Since the structure of a manuscript tray becomes complicated in order that a manuscript tray may move if it is in this thing, it is usually made to do contact and isolation of a pickup roller to a manuscript tray.
[0005]ON/OFF operation of the stopper claw and pickup roller which were mentioned above is carried out so that it may usually be contacted and isolated by a separate solenoid etc. at a manuscript tray. As this Reason, pick APPUKORO is moved to the position which contacts a manuscript sheaf at the time of the paper feeding of a manuscript, The manuscript which isolates and follows is prevented from separating from a manuscript sheaf, when a manuscript is separated by separating mechanisms, such as a separation belt and libber SUKORO, As opposed to carrying out frequently operation contacted and isolated to a manuscript sheaf as a manuscript sheaf is contacted again, in order to separate the manuscript sheaf which follows after separation of the manuscript to precede is completed, A stopper claw is moved to the position which contacts a manuscript tray at the time of the set of a manuscript, It is easy to control the direction driven by the separate solenoid etc. from a manuscript tray having very little operation contacted and isolated as it is moved to the position isolated from the manuscript tray after the paper feeding of a manuscript is started until it ends.
[0006]
[Problem to be solved by the invention]However, since the stopper claw and the pickup roller were driven by the separate driving means if it was in the conventional ADF, while part mark will increase, only the part had the problem that cost will increase. Then, as this invention drives a feeding

member and a regulating member by one driving means, an object of this invention is to provide the automatic manuscript conveying machine which can prevent a manufacturing cost from increasing while being able to prevent the part mark of a driving means from increasing.
[0007]
[Means for solving problem]In order that the invention according to claim 1 may solve an aforementioned problem, it is provided in the manuscript sheaf laid on the manuscript mounting base up to a manuscript sheaf so that it may be contacted and isolated, The feeding member which feeds paper to this manuscript sheaf and is conveyed to separating mechanism when this manuscript sheaf is contacted, It is provided in said manuscript mounting base so that contact and isolation are possible, and the tip part of a manuscript equips with the following the automatic manuscript conveying machine with which the manuscript sheaf was provided with the regulating member which regulates moving to the transportation direction lower stream side of a manuscript rather than the prescribed position on a manuscript mounting base in contact with the time of contacting a manuscript mounting base.
Establishing one driving means driven so that said feeding member and a regulating member may be moved to contact / isolation position, this driving means is a drive motor.
The transmission mechanism which divides the driving force of this drive motor into two lines, and transmits it.
Member turning which is provided in the outgoing end of each system of this transmission mechanism, and moves said feeding member and a regulating member to contact / isolation position according to the drive of each system of this transmission mechanism.

[0008]In that case, the manufacturing cost of an automatic manuscript conveying machine can be prevented from being able to set a driving source to one, as a transmission mechanism divides the driving force of one drive motor into two lines and it transmits to a feeding member and a regulating member, preventing the part mark of a driving means from increasing, and increasing. In order that the invention according to claim 2 may solve an aforementioned problem, when said drive motor rotates normally, while the driving force of this drive motor is transmitted, [in the invention according to claim 1] [one system of said transmission mechanism] It is characterized by constituting the system of another side of said transmission mechanism so that the driving force of this drive motor may be transmitted, when said drive motor is reversed, and switching contact / isolation position of said feeding member and a regulating member with reciprocal rotation of this drive motor.
[0009]In that case, since a feeding member and a regulating member can be driven with reciprocal rotation of a drive motor, a feeding member and a regulating member can be driven with the easy composition which has one drive motor. In order that the invention according to claim 3 may solve an aforementioned problem, in the invention according to claim 2, [said transmission mechanism] The position which branches the driving force of said drive motor for each system at least is equipped with the gear of the pair which has an one-way clutch, When said drive motor rotates normally, while rotating one side of said gear and transmitting driving force to either one of a feeding member and a regulating member, it is characterized by making it not transmit driving force to any of a feeding member and a regulating member, or the other, without rotating the other of the gear.
[0010]In that case, it can switch transmitting the driving force of a drive motor to a feeding member or a regulating member by using the gear which has an one-way clutch as a transmission mechanism, a driving means can be simplified, and only the part can reduce the manufacturing cost of an automatic manuscript conveying machine. In the invention according to any one of claims 1 to 3 in order that the invention according to claim 4 may solve an aforementioned problem, A part of member which constitutes the transmission mechanism of a to [from said drive motor / said feeding member] is characterized by being provided on the predetermined conveyance member which is allocated near the feeding member and feeds paper to a manuscript, and the same mind.

[0011]In that case, while being able to simplify the composition of a driving means by being allocated near the feeding member and providing a part of member which constitutes a transmission mechanism on the existing conveyance member and the same mind, it can make it unnecessary to secure the excessive space for installing a transmission mechanism. Since the new member for supporting a part of transmission mechanism becomes unnecessary, the feed route of a manuscript, etc. can be prevented from being covered with a new member, and it can prevent interfering with the work which removes a jam manuscript from a feed route.

[0012]

[Mode for carrying out the invention]Hereafter, the embodiment of this invention is described based on Drawings. Drawing 1 - 14 are the figures showing one embodiment of the automatic manuscript conveying machine concerning this invention, and show the example which carries the automatic manuscript conveying machine of this invention in the copying machine as an image forming device. As an image forming device, it is applicable to a facsimile machine, a printer, etc. other than a copying machine.

[0013]First, composition is explained. In drawing 1 and 2, 1 is a copying machine and the contact glass 2 is formed in the upper surface of this copying machine 1. The automatic manuscript conveying machine (only henceforth ADF) 3 is formed in the upper part of the copying machine 1, and this ADF3 is connected via the hinge etc. which are not illustrated to the copying machine 1 so that the contact glass 2 may be opened and closed.

[0014]The manuscript tray 4 as a manuscript mounting base with which this ADF3 can lay the manuscript sheaf P which consists of two or more manuscripts, The separation and the feeding means 5 which conveys the separated manuscript toward the contact glass 2 after separating [each] one manuscript from the manuscript sheaf laid in the manuscript tray 4, While making the exposure position on the contact glass 2 convey and suspend the manuscript conveyed toward the contact glass 2 by separation and the feeding means 5, Carrying in and the carrying means 6 which takes out the manuscript which reading ended by the reading means (a publicly known exposure lamp, a mirror, a lens, CCD, etc.) of the copying machine 1 allocated under the contact glass 2 from the contact glass 2, It is ** constituted with the ejecting means 7 which delivers the manuscript taken out from the exposure position of the contact glass 2 by carrying in and the carrying means 6 to either of the 2nd delivery trays 9 allocated under the 1st delivery tray 8 or the manuscript tray 4 projected from the side of the copying machine 1. The 1st delivery tray 8 may be formed so that it may project from the side of ADF3. The picture read and ** carried out by the reading means is transferred by the recording paper by the image forming means of a publicly known photo conductor drum, a developer, etc.

[0015]Separation and the feeding means 5 Call Collot 10 (feeding member), the paper-feeding belt 11, libber SUKORO 12, pullout drive Collot 13, pullout follower Collot 13a, It comprises 13b, the stopper claw (regulating member) 14, the manuscript set sensor 15, the pullout sensor 16, and the resist sensor 17. The stopper claw 14 is formed movable between the regulating position (contact position) which contacts the manuscript tray 4, and the retreating position (isolation position) evacuated from the manuscript tray 4, When located in a regulating position, it regulates that the manuscript sheaf P moves to the transportation direction lower stream side rather than the prescribed position on the manuscript tray 4 in contact with the tip part of the manuscript sheaf P.

[0016]Call Collot 10 is formed in the manuscript sheaf P so that contact and isolation are possible, paper is fed to the manuscript located in the upper layer from the manuscript sheaf P, and the paper-feeding belt 11 and libber SUKORO 12 separate only the top manuscript from this manuscript sheaf P. This separated manuscript is pinched by pullout drive Collot 13 and pullout follower Collot 13a and 13b who take to this and as for whom the surroundings do, is drawn out from the paper-feeding belt 11 and libber SUKORO 12, and is conveyed toward the contact glass 2.

[0017]And these call Collot 10, the paper-feeding belt 11, libber SUKORO 12, pullout drive Collot 13, and the stopper claw 14 are driven with the 1st drive mechanism (driving means) 18 and the 2nd

drive mechanism 19 which are shown in drawing 2. The 1st drive mechanism 18 has the calling motor (drive motor) 20 which consists of stepping motors, as shown in drawing 2 – 4, and it drives this calling motor 20 with the main controller 21. The driving force of this motor 20 is transmitted to the gear 23 via the belt 22 in which the tooth was formed in the inner periphery from the gear 20a attached to the output axis of the motor 20, and this gear 23 is connected with the pickup input toothed wheel 25 via the shaft member 24. This gear 25 meshes with the pickup drive gear 26 and the stopper gear 27, an one-way clutch is built in these gears 26 and 27, and it rotates only to one way with this one-way clutch. These gears 26 and 27 are equivalent to the gear provided in the position branched for each system in the driving force of the drive motor (call motor 20) said by a claim.

[0018]If the calling motor 20 rotates among drawing 2 and 3 to the CCW direction which is a clockwise rotation, the pickup drive gear 26 will rotate via the belt 22 and the pickup input toothed wheel 25 counterclockwise (here, since drawing 3 and drawing 4 have opposite direction, a direction of rotation is explained based on drawing 2 and 3). At this time, rotation of the pickup input toothed wheel 25 is not transmitted with an one-way clutch to the stop gear 27.

[0019]The pickup drive gear 26 is connected to the cam 31 via the driving shaft 29 in which the home position detection filler 28 was fixed. The driving shaft 29 is supported by the brackets 110 and 111 provided in the main part 1a of the copying machine 1, enabling free rotation, The one-way clutch 30 was attached to this driving shaft 29, this clutch 30 was fixed to the bracket 111, and the cam 31 is prevented from being reversed by the idling torque of the one-way clutch built in the pickup drive gear 28.

[0020]The filler 28 is detected by the detecting sensor 32. This sensor 32 comprises a photosensor which consists of a light emitting device and a photo detector, when the light irradiated by the photo detector from a light emitting device by the filler 32 is intercepted, is called so that the rotating position of the cam 31 may be detected and mentioned later, and detects Collot's 10 home position.

[0021]The lever 33a attached to the end of the pickup driving member 33 is contacted, and the cam 31 is isolated on it. This driving member 33 will be rotated centering on the driving shaft 34, if it is slidably attached on the same axle at the paper-feeding belt driving shaft 34 which drives the paper-feeding belt 11 as shown in drawing 5 and 6, and the cam 31 contacts the lever 33a.

[0022]Although the driving member 33 does not need to be formed in the driving shaft 34 and the same axle, if it does in this way, it can simplify the composition of the parts of a paper-feeding conveying path, and can raise the removal nature of the jam manuscript on the carrying path of separation and the feeding means 5. While calling to this driving shaft 33, calling via the Collot rocking member 35 and attaching Collot 10, the idle gear 37 is attached, The idle gear 37 was connected to the gear 36a attached to the end of the paper-feeding belt driven shaft 36 which drives the paper-feeding belt 11 via the gear 10a which called and was formed in Collot's 10 end, and these gears 10a, 37, and 36a always mesh.

[0023]Call Collot 10 has fallen below by prudence, and has usually become a position where this state conveys a manuscript in contact with the manuscript sheaf P (refer to drawing 6 (a)). If the cam 31 contacts the lever 33a, it is the position which the driving member 33 rotated centering on the driving shaft 34, and called via the rocking member 35, and pushed up Collot 10 up, and was made to move him, and this state isolated from the manuscript sheaf P (refer to drawing 6 (b)).

[0024]If paper-feeding Collot 10 is made the cam 31, while the lever 33b provided in the other end of the driving member 33 will be isolated from the stopper 38a formed in the bracket 38 which stores the paper-feeding belt 11, If it calls by prudence and Collot 10 moves to a contact position, the lever 38a will call in contact with the stopper 38a, and will regulate Collot's 10 downward position.

[0025]When it descends so that call Collot 10 may contact the manuscript sheaf P, the detecting sensor 32 detects the filler 28 and the sensor 28 outputs a signal to the main controller 21 at this time. The main controller 21 is called based on this detection information, and Collot 10 judges it to

be what was located in the contact position. On the other hand, if the calling motor 20 rotates among drawing 2 and 3 to the CW direction which is a counterclockwise rotation, the stopper gear 27 will rotate clockwise via the belt 22 and the pickup input toothed wheel 25. At this time, with the one-way clutch, rotation of the pickup input toothed wheel 25 was not transmitted, and the pickup drive gear 26 is come.

[0026]The driving shaft 39 is attached to the stopper gear 27, and the cam 40 and the home position detection filler 41 are attached to this driving shaft 39. The driving shaft 39 is established in parallel with the driving shaft 42, and the stopper claw 14 is attached to the driving shaft 42. The lever 42a is formed in the end of the driving shaft 42, and the contact and isolation of the cam 40 on the lever 42a are attained with rotation of the driving shaft 39. The lever 42a is pulled by the spring 43, if it is pulled by the spring 43 as shown in drawing 7 (a), will rotate the driving shaft 42 to a determined direction, and will move the stopper claw 14 to the retreating position isolated from the tip of a manuscript.

[0027]If the cam 40 pushes in the lever 42a in contact with the lever 42a, It moves to the regulating position where the rotating shaft 42 resists the pull strength of the spring 43, it moves to a determined direction and a counter direction, and the stopper claw 14 contacts at the tip of the manuscript sheaf P in contact with the manuscript tray 4 at this time. The belt 22, the gear 23, the shaft member 24, the gears 23, 26, and 27, the driving shaft 29, the cam 31, the pickup driving member 33, the driving shaft 34, and the driving shaft 39 constitute the transmission mechanism 120 which divides the driving force of the calling motor 20 into two lines, and transmits it from this embodiment, The rocking member 35 and the cam 40 are formed in the outgoing end of each system of the transmission mechanism 120, and constitute the member turning which calls according to the drive of each system of the transmission mechanism 120, and moves Collot 10 and the stopper claw 14 to contact / isolation position.

[0028]The detection filler 41 is detected by the filler detection sensor 44. This sensor 44 comprises a photosensor which consists of a light emitting device and a photo detector, when the light irradiated by the photo detector from a light emitting device by the filler 41 is intercepted, detects the rotating position of the cam 40 and outputs a signal to the main controller 21. When the stopper claw 14 is in the retreating position shown in drawing 7 (a), [the detecting sensor 44] A signal is outputted to the main controller 21, when this signal inputs, it judges that the main controller 21 has the stopper claw 14 in a retreating position, and when this signal does not input, it is judged that it has the stopper claw 14 in a regulating position.

[0029]The paper-feeding belt 11 is wound around the paper-feeding belt driving shaft 34 and the paper-feeding belt driven shaft 36, enabling free circumference migration, as shown in drawing 5, and 6 and 8, and this driving shaft 34 and driven shaft 36 are engaging with the bracket 38. As for the driven shaft 36, the cylindrical member 45 is inserted in the inside, and the springs 46a and 46b are provided contractingly between the both ends of this cylindrical member 45, and the bracket 38. [these springs 46a and 46b] [by energizing the driven shaft 36 in the direction isolated from ****** 34] Fixed tension is given to the paper-feeding belt 11 by forcing on the bracket 38 the bearings 47a and 47b provided in the both ends of the driven shaft 36 via the paper-feeding belt 11.

[0030]By contracting the springs 46a and 46b, as tension is not given to the paper-feeding belt 11, the paper-feeding belt 11, the driving shaft 34, and the driven shaft 36 can be removed from the bracket 38. The cylindrical member 45 is inserted in the rod 35a provided in the rocking member 35, and the rocking member 35 moves it by rocking centering on the driving shaft 34 between the position where call Collot 10 contacts the manuscript sheaf P, and the isolated position.

[0031]Thus, while the stopper claw 14 moves between retreating positions with the one calling motor 20, call Collot 10 moves between a retreating position and a contact position. When the Koppies Tart signal inputs two or more sets from the main part of 1, the main controller 21 drives the calling motor 20, is called while it moves the stopper claw 14 to a retreating position, and makes the 1st drive mechanism 18 drive so that Collot 10 may be moved to a contact position.

[0032]On the other hand, the 2nd drive mechanism 19 has the feed motor 48 driven based on the command signal from the main controller 21 as shown in drawing 2, The driving force of this feed motor 48 is transmitted to the transfer gear 55 via the gear 49, the belt 50, the gears 51 and 52, the belt 53, and the gear 54, respectively. It has geared with the gear 56 which transmits driving force to the paper-feeding belt driving shaft 34 on this transfer gear 55, and the one-way clutch is built in this gear 56.
[0033]The gear 57 in which one-way CHIRATCHI was built in the gear 55 meshes, and this gear 57 drives libber SUKORO 12 via the gear 58. The transfer gear 55 drives pullout drive Collot 13 via the gears 59, 60, 61, 62, 63, and 64. The clutch 64a is formed between pullout drive Collot 13 and the gear 64, and this clutch 64a is based on the command signal from the main controller 21, and transmits and intercepts the driving force from the gear 64 to pullout drive Collot 13. The one-way clutch is built in the gear 59. A thin arrow shows transfer of driving force when the calling motor 20 rotates to a CW direction among drawing 2, and a thick arrow shows transfer of driving force when the calling motor 20 rotates to a CCW direction.
[0034]The main controller 21 drives the feed motor 48 based on the detection information from the manuscript set sensor 15, the pullout sensor 16, and the resist sensor 17. This pullout sensor 16 continues crosswise [of a manuscript], is formed, and can also detect the crosswise length of a manuscript. [two or more] When the Koppies Tart signal inputted two or more sets from the main part of 1 and it specifically detects that the main controller 21 has the manuscript sheaf P on the manuscript tray 4, After driving the calling motor 20 to a CW direction and moving the stopper claw 14 to a retreating position, the calling motor 20 is driven and called to a CCW direction, and the 1st drive mechanism 18 is made to drive so that Collot 10 may be moved to a contact position.
[0035]If the feed motor 48 rotates succeedingly in this operation in the CW direction which is an anti-clock direction of rotation, this torque will be transmitted to the transfer gear 55 via the gear 49, the belt 50, the gears 51 and 52, the belt 53, and the gear 54, and the transfer gear 55 will rotate counterclockwise. When rotating in this direction, the gear 56 rotates and circumference migration of the paper-feeding belt 11 is carried out clockwise. Since the gear 57 also rotates when the transfer gear 55 rotates counterclockwise, this rotation is transmitted to libber SUKORO 12 via the gear 58, and libber SUKORO 12 rotates counterclockwise.
[0036]For this reason, in order that libber SUKORO 12 may move in the paper-feeding prevention direction while the paper-feeding belt 11 carries out circumference migration in the paper-feeding direction of a manuscript after the paper feeding of the manuscript sheaf P is started by call Collot 10 by whom driving force is transmitted from the paper-feeding belt driving shaft 34, ****** located in the top is separated from the manuscript sheaf P to which paper was fed. Since driving force is transmitted to pullout drive Collot 13 via the gears 59, 60, 61, 58, 62, 63, and 64 from the transfer gear 55, Paper is fed to the manuscript which pullout drive Collot 13 rotated counterclockwise and was separated by this Collot 13 and pullout follower Collot 13a and 13b.
[0037]If the tip of this manuscript is detected by the pullout sensor 16, after driving and calling the calling motor 20 to a CCW direction and moving Collot 10 to a retreating position, the feed motor 48 is driven to the CW direction which is a clockwise rotation. Since the transfer gear 55 rotates clockwise at this time, as for the gears 56 and 57, the rotation from the transfer gear 55 is not transmitted, but the paper-feeding belt 11 is suspended by the one-way clutch. However, while the transfer gear 55 drives pullout drive Collot 13 via the gears 59, 60, 61, 62, 63, and 64, [the gear] A manuscript is conveyed toward the contact glass 2 by pullout drive Collot 13, preventing separation of the manuscript which follows by libber SUKORO 12, since libber SUKORO 12 is driven via the gears 59, 60, 61, and 58.
[0038]A manuscript is conveyed by this contact glass 6 by carrying in and the carrying means 6. This carrying in and carrying means 6 have the transportation belt 65, and this transportation belt 65 is wound around the transportation belt driving roller 66 and the transportation belt follower roller 67. The transportation belt driving roller 66 is driven with the 3rd drive mechanism 68. This 3rd drive

mechanism 68 has the transportation belt motor 69, and drives this motor 69 with the main controller 21, Transmitting driving force to the transportation belt driving roller 66 via the gear 70, the belt 71, the gears 72 and 73, the belt 74, and the gear 75, in connection with right and inverse rotation of the motor 69, as for the transportation belt driving roller 66, right and inverse rotation carry out the transportation belt 65.

[0039]This carrying in and carrying means 6 make the CCW direction which is a counterclockwise rotation right-rotate the transportation belt motor 69 with the command signal from the main controller 21, when the feed motor 48 carries out inverse rotation to a CCW direction and stops the drive of the paper-feeding belt 11. For this reason, the manuscript which the transportation belt 65 rotated right with the 3rd drive mechanism 68, and was separated is carried in on the contact glass 2. And when the back end of the manuscript carried in to the contact glass 2 is detected by the resist sensor 17, the exposure position of the contact glass 2 is made to suspend a manuscript, when only a predetermined pulse carries out the normal rotation drive of the transportation belt motor 69 from this detection time.

[0040]And the drive of the feed motor 48 and the transportation belt motor 69 is stopped at this time. After the manuscript which follows from the manuscript in which the feed motor 48 drove to the CW direction again, and was laid on the manuscript tray 4 next was separated, When the resist sensor 17 detects the tip of this manuscript and only a predetermined pulse is conveyed from this detection time, the drive of the feed motor 48 is stopped, the manuscript which follows withdraws in advance, and operation is performed.

[0041]On the other hand, when a manuscript stops to the exposure position of the contact glass 2, reading and exposure of a manuscript are performed by the copying machine 1. Since a signal is inputted into the main controller 21 from the copying machine 1 after this reading and exposure are completed, if this signal inputs the controller 21, a manuscript will be taken out by the ejecting means 7 from the contact glass 2 by carrying out the normal rotation drive of the transportation belt motor 69 again.

[0042]The ejecting means 7 Inversion driving Collot 81, delivery follower Collot 82, reversal guy DOKORO 83, reversal follower Collot 84, the 1st switching claw 85, the 2nd switching claw 86, delivery drive Collot 87, delivery follower Collot 88, and the delivery sensor 89a, Inversion driving Collot 81, delivery drive Collot 87, and the 1st and 2 change nails 85 and 86 are driven with the 4th drive mechanism 90 from 89b. The 4th drive mechanism 90 has the delivery motor 91 driven with the command signal from the main controller 21, and the gear 92 is connected to the output axis 91a of this delivery motor 91 via the belt 91b. This gear 92 transmits driving force to the gears 93, 94, and 95 via the belt 96, respectively, and inversion driving Collot 81 and delivery drive Collot 87 are connected to the gears 95 and 96, respectively.

[0043]While the 1st change nail 85 is rocked by the 1st solenoid 97, the 2nd change nail 86 is rocked by the 2nd solenoid 98. These the 1st and 2 solenoids 97 and 98 are turned on and off by the command signal from the main controller 21. Specifically, the 1st switching claw 85 is in the contact glass 2 and the state where it has stood by in the foambow JISHON position (the undersurface of the switching claw 85 constitutes a part of carrying path of a manuscript) which opens the 1st delivery tray 8 for free passage, by the 1st solenoid 97 at the time of the delivery of an one side manuscript.

[0044]While the main controller 21 makes the 1st switching claw 85 stand by to a home position, without driving the 1st solenoid 97 at the time of the one side mode which conveys the usual one side manuscript, [the main controller] At the same time as it drives the transportation belt motor 69 after reading of a manuscript and termination of exposure, the delivery motor 91 is made to drive. For this reason, paper is linearly delivered to the manuscript pinched by inversion driving Collot 81 and reversal follower Collot 82, without front and back surfaces being reversed by the 1st delivery tray 8.

[0045]When double-side mode is specified on the other hand by the control unit by which the main

controller 21 was formed in the copying machine 1 and which is not illustrated, While making it move to the position which opens the contact glass 2 and the reversal course 101 for free passage from a home position (the upper surface of the switching claw 85 constitutes a part of carrying path of a manuscript as shown in drawing 1), [by driving the 1st solenoid 97] [the 1st switching claw 85] At the same time as it drives the transportation belt motor 69 after reading of one side of a double-sided manuscript, and termination of exposure, the delivery motor 91 is made to drive. For this reason, a manuscript is guided at the reversal course 101 pinched by inversion driving Collot 81 and delivery follower Collot 82, and is conveyed by reversal guy DOKORO 83 toward the 2nd switching claw 86.

[0046]When the manuscript which drove the 2nd switching claw 86 by the 2nd solenoid 98, and reading of one side ended is taken out from the contact glass 2, It switches to the foambow JISHON position (as shown in drawing 1, the undersurface of the 2nd switching claw 86 constitutes a part of carrying path of a manuscript) which opens for free passage the reversal course 101 and the return course 102 established between the contact glass 2, without driving by the 2nd solenoid 98.

[0047]For this reason, after the manuscript taken out from the contact glass 2 is conveyed by the reversal course 101 with the 1st switching claw 85, by the 2nd switching claw 86, after front and back surfaces have been reversed by the return course 102, it is pinched by inversion driving Collot 81 and reversal follower Collot 84b, and is returned to the contact glass 2. If the tip of a manuscript is detected by the delivery sensor 89b formed on the reversal course 101, The main controller 21 carries out the reverse drive of the transportation belt motor 69, and carries out the reverse drive of the transportation belt 65, When the rotation pulse of the transportation belt motor 69 from the time of the tip of a manuscript being detected by the delivery sensor 89b reaches a predetermined value, it judges that the manuscript was conveyed to the exposure position on the contact glass 2, and the transportation belt motor 102 is stopped.

[0048]Since a signal is inputted into the controller 21 from the copying machine 1 after reading and exposure of a manuscript are completed in an exposure position, If this signal inputs the controller 21, the normal rotation drive of the transportation belt motor 69 will be carried out, While the drive of the 2nd solenoid 98 is stopped while driving the 1st solenoid 97, and making the contact glass 2 and the reversal course 101 open for free passage with the 1st switching claw 85, By making the return course 102 and the 2nd delivery tray 9 open for free passage with the 2nd switching claw 86, (The upper part of the 2nd switching claw 86 constitutes a part of carrying path of a manuscript), After the manuscript taken out from the contact glass 2 is pinched and conveyed by inversion driving Collot 81 and reversal follower Collot 82, it is pinched by delivery drive Collot 87 and delivery follower Collot 88, and paper is delivered to it on the 2nd delivery tray 9.

[0049]On the other hand, the manuscript set sensor 15, the pullout sensor 16, and the resist sensor 17 which were mentioned above constitute a manuscript detection means to detect the existence of the manuscript on the carrying path 105 of the manuscript containing the manuscript tray 4, The main controller 21 constitutes the control means which controls migration of the stopper claw 14 based on the detection information from these manuscript set sensor 15, the pullout sensor 16, and the resist sensor 17.

[0050]When the main controller 21 specifically has a manuscript on the carrying path 105 of the manuscript tray 4, and separation and a feeding means 5 at the time of the injection of the power supply of the copying machine 1, When it is detected that the stopper claw 14 is located in a regulating position based on the detection information from the filler detection sensor 44, The calling motor 20 is driven, and when it is detected that move the stopper claw 14 to a retreating position, and the stopper claw 14 is located in a retreating position with the 1st drive mechanism 18, control which locates the stopper claw 14 in a retreating position as it is is performed.

[0051]In this embodiment, the cover opening and closing 103 which can be opened and closed freely is formed in the separation and feeding means 5 side of the main part 3a of ADF3 to the main part 3a so that the carrying path 105 on separation and the feeding means 5 may be exposed and

blockaded, The cover-opening-and-closing detection sensor 104 which detects the switching condition of this cover opening and closing 3 on the main part 3a near the cover 103, and outputs detection information to the main controller 21 is formed, and this sensor 104 comprises a photosensor, a touch sensor, etc. Pullout follower Collot 13a and 13b is attached to the cover opening and closing 103, enabling free rotation.

[0052]And while the main controller 21 detects that the cover opening and closing 103 was wide opened based on the detection information from the sensor 104, [the main controller] When the stopper claw 14 detects being located in a regulating position irrespective of the existence of the manuscript on the carrying path 105 of the manuscript tray 4, and separation and a feeding means 5, The stopper claw 14 is moved to a retreating position, and when it is detected that the stopper claw 14 is located in a retreating position, the stopper claw 14 is located in a retreating position as it is.

[0053]While detecting what the cover opening and closing 103 closed based on detection information from the sensor 104, When it detects that there is no manuscript on the carrying path 105 of the manuscript tray 4, and separation and a feeding means 5 and the stopper claw 14 detects being located in a retreating position, The stopper claw 14 is moved to a regulating position, and when it is detected that the stopper claw 14 is located in a regulating position, the stopper claw 14 is located in a regulating position as it is.

[0054]While detecting what the cover opening and closing 103 closed based on the detection information from the sensor 104, When it detects that a manuscript is on the carrying path 105 of the manuscript tray 4, and separation and a feeding means 4 and the stopper claw 14 detects being located in a regulating position, The stopper claw 14 is moved to a retreating position, and when it is detected that the stopper claw 14 is located in a retreating position, the stopper claw 14 is located in a retreating position as it is.

[0055]Next, based on the flow chart shown in drawing 9 - 14, the conveying action of a manuscript and position control operation of the stopper claw 14 of this embodiment are explained. This flow chart is the paper-feeding operation program provided in the main controller 21. Here, the conveying action of an one side manuscript is explained. First, the manuscript sheaf P is laid on the manuscript tray 4, and if the printing key provided in the control unit of the copying machine 1 is pressed and a paper-feeding signal is transmitted to the main controller 21 from the main part of the copying machine 1, the program of the main controller 21 will shift to a paper-feeding operation routine.

[0056]First, when it distinguishes whether the number of the manuscripts to which paper is fed is the 1st (Step S1) and it is judged to be that whose number is the 1st, while making the paper-feeding clutch 64a turn on, a CW direction is made to rotate the calling motor 20 in drawing 9 (Step S2). If the CW direction which is a counterclockwise rotation is made to rotate the calling motor 20, the stopper gear 27 will rotate clockwise via the belt 22 and the pickup input toothed wheel 25. At this time, with the one-way clutch, rotation of the pickup input toothed wheel 25 was not transmitted, and the pickup drive gear 26 is come.

[0057]When the stopper gear 27 rotates, it is made to move to the retreating position which the cam 40 is isolated from the lever 42a, and isolates the stopper claw 14 from the tip of a manuscript as the lever 42a is pulled by the spring 43, the driving shaft 42 is rotated to a determined direction and it is shown in drawing 7 (a). And it judges that whether the stopper claw 14 moved to the retreating position moved to the retreating position when it distinguished (Step S3) and the detection filler 41 was detected by the filler detection sensor 44, and the reverse drive of the calling motor 20 is carried out to a CCW direction (Step S4). At this time, driving force is transmitted to the pickup drive gear 26 via the belt 22 and the pickup input toothed wheel 25 from the calling motor 20. At this time, rotation of the pickup input toothed wheel 25 is not transmitted with an one-way clutch to the stop gear 27.

[0058]Subsequently, if the pickup drive gear 26 rotates, it will isolate and call from the lever 33a of the pickup driving shaft 33 by the cam 31, and Collot 10 will be moved to the contact position which contacts the manuscript sheaf P by prudence. When it distinguishes whether the stopper claw 10

moved to the contact position at this time (Step S5) and the detection filler 28 is detected by the filler detection sensor 32, it is judged as what call Collot 10 moved to the contact position, and the drive of the calling motor 20 is stopped (Step S6).

[0059]Subsequently, a CCW direction is made to rotate the feed motor 48 and the transportation belt motor 69. (Step S7). After paper is fed to the manuscript sheaf P by call Collot 10 at this time, the manuscript located in the top is separated from the manuscript sheaf P by the paper-feeding belt 11 and libber SUKORO 12, and this separated manuscript is conveyed by pullout drive Collot 13 toward the contact glass 2.

[0060]Subsequently, when it does not distinguish and (Step S8) turn on whether the tip of the manuscript was detected by the pullout sensor 16, having been set to jam detection distinguishes whether carried out specified time elapse (Step S9). And even if it carries out specified time elapse, when the tip of a manuscript is not detected, jam detection is performed in the pullout sensor 16 as what a manuscript has not reached, and paper-feeding operation is interrupted (Step S10). On the other hand, when the tip of a manuscript is detected by the pullout sensor 16 at Step S8, the reverse drive of the feed motor 48 is carried out, and the calling motor 20 is driven to a CCW direction (Step S11).

[0061][at this time] [for not transmitting driving force to the paper-feeding belt 11 by the 2nd drive mechanism 19] Driving force is transmitted only to the pullout driving roller 13 and libber SUKORO 12, and a manuscript is conveyed by pullout follower Collot 13 toward the contact glass 2, without performing separation of the manuscript mentioned later. If the calling motor 20 is driven to a CCW direction, in contact with the lever 33a, the driving member 33 rotates centering on the driving shaft 34, the cam 31 calls via the rocking member 35, will push up Collot 10 up, it will be made to move, and call Collot 10 will be moved to the retreating position isolated from the manuscript sheaf P to the upper part.

[0062]Subsequently, when it distinguishes whether call Collot 10 moved to the retreating position based on the detection information from the filler detection sensor 32 (Step S12) and call Collot 10 moves to a retreating position, the drive of the calling motor 20 is stopped (Step S13). Subsequently, it distinguishes whether the resist sensor 17 turned on, and when the resist sensor 17 does not turn on, having been set to jam detection distinguishes whether carried out specified time elapse (Step S15).

[0063]And even if it carries out specified time elapse, when the tip of a manuscript is not detected, jam detection is performed to the resist sensor 17 as what a manuscript has not reached, and paper-feeding operation is interrupted (Step S16). carrying out the **** drive of the feed motor 48 on the other hand, when the tip of a manuscript is detected by the resist sensor 17 at Step S14 — up to rotational frequency equivalent to the transportation belt motor 69 — top ** — last (Step S17).

[0064]Subsequently, after transmitting the crosswise length of a manuscript to the copying machine 1 based on the detection information from the pullout sensor 16 (Step S18), It distinguishes whether the pullout sensor 16 turned off (Step S19), and when the pullout sensor 16 does not turn off, having been set to jam detection distinguishes whether carried out specified time elapse (Step S20). And even if it carries out specified time elapse, when a manuscript continues being detected, jam detection is performed as that to which the manuscript stagnated around pullout sensor 16, and paper-feeding operation is interrupted (Step S21).

[0065]On the other hand, when the back end of a manuscript is detected by the pullout sensor 16 at Step S19, based on the manuscript order end detection information by the pullout sensor 16, the length information of a manuscript is transmitted to the copying machine 1 side (Step S22). Subsequently, as shown in drawing 10, when it is not distinguished and (Step S23) turned off whether the resist sensor 17 turned off, having been set to jam detection distinguishes whether carried out specified time elapse (Step S24).

[0066]And even if it carries out specified time elapse, when a manuscript continues being detected,

jam detection is performed as that to which the manuscript stagnated around resist sensor 17, and paper-feeding operation is interrupted (Step S25). On the other hand, when the resist sensor 17 is OFF at Step S23, resist back end interrupt processing is performed (Step S26). This operation is operation which makes the exposure position of the contact glass 2 suspend a manuscript, when only a predetermined pulse carries out the normal rotation drive of the transportation belt motor 69 from the time of the back end of a manuscript being detected by the resist sensor 17.

[0067]Subsequently, when it distinguishes whether there is any following manuscript (S28) and there is no following manuscript after transmitting the stop signal of a manuscript to the copying machine 1 (Step S27), the paper-feeding clutch 64a is turned off and the calling motor 20 is driven to a CW direction (Step S29). At this time, when the cam 40 resists the pull strength of the spring 43 and pushes in the lever 42a, as shown in drawing 7 (b), the driving shaft 42 rotates and the stopper claw 14 moves to a regulating position from a retreating position.

[0068]Subsequently, it distinguishes whether the stopper claw 14 moved to the regulating position (Step S30), it judges that it moved to the retreating position when the detection filler 41 was no longer detected by the filler detection sensor 44, the calling motor 20 is suspended, and processing (Step S31) is ended. on the other hand, when there is the following manuscript at Step S28, it is shown in drawing 11 — it withdraws in advance and operation is performed. In drawing 10, first, the calling motor 20 is moved to a CCW direction (Step S41), and call Collot 10 is moved to a contact position. Subsequently, it is distinguished whether it called based on the detection information from the filler detection sensor 32, and Collot 10 moved to the contact position (Step S42), When it moves, while stopping the drive of the calling motor 20, the feed motor 48 is rotated to a CCW direction, call Collot 10, the transportation belt 11, libber SUKORO 12, and pullout drive Collot 13 are driven, and the manuscript on the manuscript tray (Step S43) 4 is separated.

[0069]Subsequently, when it is distinguished and (Step S45) detected by the resist sensor 17 whether the tip of the manuscript of a manuscript was detected, the reverse drive of the feed motor 48 is carried out (Step S45). Subsequently, the calling motor 20 is rotated to a CCW direction. For this reason, while call Collot 10 moves to a retreating position, a manuscript is conveyed by the driving force of only the pullout driving roller 13. Subsequently, when it judges that distinguished (S47) and whether it called based on the detection information from the filler detection sensor 32, and Collot 10 moved to the retreating position moved to the retreating position, the drive of the calling motor 20 is stopped (Step S48).

[0070]Subsequently, it stands by until stop the drive of the feed motor 69, a manuscript (Step S50) withdraws in advance, it ends operation and a paper-feeding signal inputs from the copying machine 1, when it is distinguished and (Step S49) detected whether the resist sensor 17 detected the tip of the manuscript. When the number of manuscripts is not the 1st at Step S1, While progressing to Step S51 of drawing 9 and making a CW direction rotate the feed motor 48, a CCW direction is made to rotate the transportation belt motor 69, the manuscript which is withdrawing in advance and standing by is conveyed to the exposure position of the contact glass 2, and it shifts to processing of Step S17.

[0071]Termination of this the operation of a series of will distinguish whether the manuscript was conveyed by the contact glass 2 as shown in drawing 12 (Step S52). Since a flag will be set in the memory which is not illustrated if a manuscript is conveyed by the contact glass 2 and exposure is performed at this time, based on this memory information, it is distinguished whether it is finishing [conveyance]. After driving the transportation belt motor 69 and the delivery motor 91 (Step S53) and taking out a manuscript from on the contact glass 2 with the transportation belt 65 case [conveyed], by conveyance drive Collot 81 and reversal follower Collot 82, a manuscript is pinched and a manuscript is conveyed.

[0072]Subsequently, when it is not distinguished and (Step S54) detected by the delivery sensor 89a whether the tip of the manuscript was detected, having been set to jam detection distinguishes whether carried out specified time elapse (Step S55). And even if it carries out specified time

elapse, when the tip of a manuscript is not detected, jam detection is performed in the delivery sensor 89a as what a manuscript has not reached, and paper-feeding operation is interrupted (Step S56).

[0073]When specified time elapse has not been carried out at Step S55, Distinguish whether it is a stop of the manuscript by the paper-feeding operation in which the transportation belt motor 69 is performed in parallel to delivery operation in the case of a small size manuscript (Step S57), and in affirmation, Since a manuscript may not be discharged along with the contact glass 2 top two or more sheets, the drive of the delivery motor 91 is stopped and processing (Step S58) is ended.

[0074]When the delivery sensor 89 turns on at Step S54, on the other hand, After carrying out a delivery slowdown counter clearance (Step S59), based on the driving pulse of the transportation belt motor 69, it calculates having conveyed the distance which the specified quantity (this embodiment 15 mm) deducted rather than the length according to the size from the tip of a manuscript, While the rear end part of the manuscript is pinched by inversion driving Collot 81 and reversal follower Collot 82 so that paper may be delivered to a manuscript on the 1st delivery tray 8 and starting a slowdown of the delivery motor 91, the drive of the delivery motor 91 is stopped (Step S60, S61).

[0075]Subsequently, when it is not distinguished and (Step S62) turned off whether the delivery sensor 89 turned off, having been set to jam detection distinguishes whether carried out specified time elapse (Step S63). And even if it carries out specified time elapse, when a manuscript continues being detected, jam detection is performed as that to which the manuscript stagnated around delivery sensor 89a, and paper-feeding operation is interrupted (Step S64).

[0076]When the delivery sensor 89 turns off, on the other hand, (Step S65), when progressing to the flow of drawing 13 and distinguishing whether specified time elapse was carried out after the slowdown of the delivery motor 91, and specified time elapse is carried out, after transmitting a delivery completion signal to the copying machine 1 (Step S66), the delivery motor 91 is suspended for a drive and processing is ended. Next, based on drawing 14, position control operation of the stopper claw 14 is explained.

[0077]First, it distinguishes whether the power supply of the copying machine 1 was switched on and the power supply was supplied to ADF3 (Step S71), and at this time, since the position of the stopper claw 14 is unknown, the position of the stopper claw 14 is checked for an initial setup. That is, when ****** [immediately after the injection of a power supply] is distinguished at Step S71 and it is judged as that which is immediately after powering on, it shifts to A of drawing 9.

[0078]After performing processing of A, it is distinguished whether based on the detection information from the manuscript set sensor 15, the pullout sensor 16, and the resist sensor 17, a manuscript is on the carrying path 105 of separation and the feeding means 5, and the manuscript tray 4 (Step S73). And when it is judged as a thing without a manuscript, it is distinguished whether the stopper claw 14 is in a retreating position based on the detection information from the filler detection sensor 44 (Step S74).

[0079]When it judges that it does not have the stopper claw 14 in a retreating position at this time, Since the stopper claw 14 is in a regulating position, when it judges that considers it as a position as it is, and it is in a retreating position, It is distinguished whether the calling motor 20 was driven to the CCW direction, the stopper claw 14 was moved toward the regulating position (Step S75), and the stopper claw 14 moved to the regulating position based on the detection information from the filler detection sensor 44 (Step S76). And when it is judged as what the stopper claw 14 moved to the regulating position, the drive of the calling motor 20 is stopped (Step S77).

[0080]On the other hand, when it judges that it has a manuscript at Step S73, it is distinguished whether the stopper claw 14 is in a regulating position based on the detection information from the filler detection sensor 44 (Step S79). When it judges here that it does not have the stopper claw 14 in a regulating position, Since the stopper claw 14 is in a retreating position, when it judges that considers it as a position as it is, and it has the stopper claw 14 in a regulating position, It is

distinguished whether the calling motor 20 was driven to the CCW direction, the stopper claw 14 was moved toward the retreating position (Step S80), and the stopper claw 14 moved to the retreating position based on the detection information from the filler detection sensor 44 (Step S81).

[0081]When the stopper claw 14 judges it as what was located in the retreating position, the drive of the calling motor 20 is stopped (Step S82). Thus, when a manuscript is on the carrying path 105 of the manuscript tray 4, and separation and a feeding means 5 at the time of the injection of a power supply, When it is detected that the stopper claw 14 is located in a regulating position based on the detection information from the filler detection sensor 44, When it is detected that drive the calling motor 20, move the stopper claw 14 to a retreating position with the 1st drive mechanism 18, and the stopper claw 14 is located in a retreating position, In order to perform control which locates the stopper claw 14 in a retreating position as it is, While being able to prevent a manuscript from being caught in the stopper claw 14 irrespective of the existence of a jam manuscript at the time of the injection of a power supply and being able to remove a manuscript easily, it can be prevented from the stopper claw 14 colliding with a manuscript and damaging a manuscript.
[0082]It distinguishes whether on the other hand, when an initial was set up at Step S71, based on the detection information from the opening and shutting sensor 104, by the energized state, the paper-feeding cover 103 was opened wide and it was blockaded, and only when the cover 103 is from an opened state in a closed state, processing after Step S73 is performed. Namely, while detecting what the cover opening and closing 103 closed based on detection information from the sensor 104, When it detects that there is no manuscript on the carrying path 105 of the manuscript tray 4, and separation and a feeding means 5 and the stopper claw 14 detects being located in a retreating position, When it is detected that move the stopper claw 14 to a regulating position, and the stopper claw 14 is located in a regulating position, Since it was made to locate the stopper claw 14 in a regulating position as it is, when the cover opening and closing 103 is closed after removal of a jam manuscript, When there is no manuscript on the carrying path 105 of the manuscript containing the manuscript tray 4, the stopper claw 14 can be moved to a regulating position, and a manuscript can be easily set to the manuscript tray 4.
[0083]When a manuscript is laid under the stopper claw 14 after removal of a jam manuscript, the stopper claw 14 is changed into the state where you made it located in a retreating position freely, While it can be prevented from the stopper claw 14 colliding with a manuscript and damaging a manuscript, when the cover opening and closing 103 judges that it was from the closed state in the opened state at Step S78, processing after Step S79 is performed.
[0084]Namely, while detecting that the cover opening and closing 103 was wide opened based on detection information from the sensor 104, When the stopper claw 14 detects being located in a regulating position irrespective of the existence of the manuscript on the carrying path 105 of the manuscript tray 4, and separation and a feeding means 5, When it is detected that move the stopper claw 14 to a retreating position, and the stopper claw 14 is located in a retreating position, In order to locate the stopper claw 14 in a retreating position as it is, Even when the manuscript which is on the carrying path 105 containing the manuscript tray 4 at the time of opening of the cover opening and closing 103 is small and detection is difficult, [by moving the stopper claw 14 to a retreating position] A manuscript is easily removable while being able to prevent it from the stopper claw 14 colliding with a manuscript and damaging a manuscript.
[0085]As explained above, form the 1st one drive mechanism 18 driven in this embodiment so that call Collot 10 and the stopper claw 14 may be moved to contact / isolation position, and this 1st drive mechanism 18 The calling motor 20, The transmission mechanism 120 which divides the driving force of this calling motor 20 into two lines, and transmits it, Since it constituted from the rocking member 35 and the cam 40 which are provided in the outgoing end of each system of the transmission mechanism 120, call according to the drive of each system of the transmission mechanism 120, and move Collot 10 and the stopper claw 14 to contact / isolation position, The

manufacturing cost of ADF3 can be prevented from being able to set a driving source to one, preventing the part mark of the 1st drive mechanism 18 from increasing, and increasing.
[0086]When the calling motor 20 rotates to a CW direction, while the driving force of the calling motor 20 is transmitted, [one system (drive system after the gear 27) of the transmission mechanism 120] The system (gear 26 side) of another side of the transmission mechanism 120 is constituted so that the driving force of the calling motor 20 may be transmitted, when the calling motor 20 rotates to a CCW direction, Since it calls with reciprocal rotation of the calling motor 20 and the position of Collot 10 and the stopper claw 14 was switched, it can call with reciprocal rotation of the calling motor 20, and Collot 10 and the stopper claw 14 can be driven. For this reason, it can call with the easy composition which has the one calling motor 20, and Collot 10 and the stopper claw 14 can be driven.
[0087]The transmission mechanism 120 equips the position which branches the driving force of the calling motor 20 for each system with 26 which has an one-way clutch, and 27, When the calling motor 20 rotates to a CW direction, while rotating the gear 27 and transmitting driving force to the stopper claw 14, When it calls without rotating the gear 26, and driving force is not transmitted to Collot 10 and the calling motor 20 rotates to a CCW direction, while rotating the gear 26, calling and transmitting driving force to Collot 10, Having made it not transmit driving force to the stopper claw 14, without rotating the gear 27 A sake, It can switch calling the driving force of the calling motor 20 by using the gears 26 and 27 which have an one-way clutch as the transmission mechanism 120, and transmitting to Collot 10 or the stopper claw 14, The 1st drive mechanism 18 can be simplified and only the part can reduce the manufacturing cost of ADF3.
[0088]Since it provided on the paper-feeding belt driving shaft 34 and the same mind, the part 33, i.e., the pickup driving member, of the member which constitutes the transmission mechanism 120 until it calls from the calling motor 20 and results in Collot 10, While being able to simplify the composition of the 1st drive mechanism 18, it can make it unnecessary to secure the excessive space for installing the transmission mechanism 120. Since the new member for supporting a part of transmission mechanism 120 becomes unnecessary, the carrying path 105 can be prevented from being covered with a new member, and it can prevent interfering with the work which removes a jam manuscript from the carrying path 105.
[0089]
[Effect of the Invention]According to the invention according to claim 1, a driving source can be set to one, as a transmission mechanism divides the driving force of one drive motor into two lines and it transmits to a feeding member and a regulating member, The manufacturing cost of an automatic manuscript conveying machine can be prevented from preventing the part mark of a driving means from increasing, and increasing.
[0090]According to the invention according to claim 2, since a feeding member and a regulating member can be driven with reciprocal rotation of a drive motor, a feeding member and a regulating member can be driven with the easy composition which has one drive motor. According to the invention according to claim 3, it can switch transmitting the driving force of a drive motor to a feeding member or a regulating member by using the gear which has an one-way clutch as a transmission mechanism, a driving means can be simplified, and only the part can reduce the manufacturing cost of an automatic manuscript conveying machine.
[0091]According to the invention according to claim 4, while being able to simplify the composition of a driving means by being allocated near the feeding member and providing a part of member which constitutes a transmission mechanism on the existing conveyance member and the same mind, it can make it unnecessary to secure the excessive space for installing a transmission mechanism. Since the new member for supporting a part of transmission mechanism becomes unnecessary, the feed route of a manuscript, etc. can be prevented from being covered with a new member, and it can prevent interfering with the work which removes a jam manuscript from a feed route.

[Translation done.]